The background of the slide is a photograph of a powerful waterfall cascading down a steep, rocky mountain face. The water is white and frothy as it falls, creating a mist at the base. The surrounding landscape includes green trees and a grassy field in the foreground.

# **Government Initiatives: EV 101 Workshop February 23, 2011**

**Paul Wuebben, Clean Fuels Officer, SCAQMD**  
*Moderator*

# Convergence of Air Quality, Climate & Energy Security

## South Coast Air Basin:

- **25% of U.S. ozone exposure**
- **50% of U.S. PM-10 exposure**
- **> 85% of airborne cancer risk from petroleum fuel use (diesel + gasoline)**
- Transportation sources: > 40% of CA GHG
- Energy security:
  - CA Transportation: > 95% reliance on petroleum
  - 72% of U.S. oil supply is imported

# *Who would have thought...*

- Chevron new discoveries = 25% of annual production
- Obama 1M EV Plan by 2015
  - *With \$10 MM each for 30 companies via competition...*

## ■ **Our “Sputnik Moment” is now...**

- Libya is threatening an energy embargo on the west
- World commodity shortages are now occurring on a cyclical basis...
- The next energy shock may not stop at \$147 per bbl...
- There is more electric drive competition than ever in history
- Energy import wealth transfer now exceeds \$1 B per day!
- CO<sub>2</sub> today is the highest in 450,000 years
- 2010 tied 2005 as the warmest year in recorded history
- ***Security = Diversity = Clean Air***

# Govt. Initiatives:

## ■ Regulatory Push:

- AB 32
  - CARB ZEV III
  - CARB ZEB rule
  - EPA GHG standards
  - SCAQMD Fleet Rules
- 

## ■ Technology Push

- SCAQMD EV R+D
- CARB Hybrid support
- DOE Battery + Infrastructure support + ARPA-e
- CEC AB 118 Program

## ■ Demand Pull

- Federal tax incentives
- CARB incentives
- SCAQMD
  - Fleet Rules, Carl Moyer, Prop 1B, Clean Fuels Program

# AQMD Initiatives

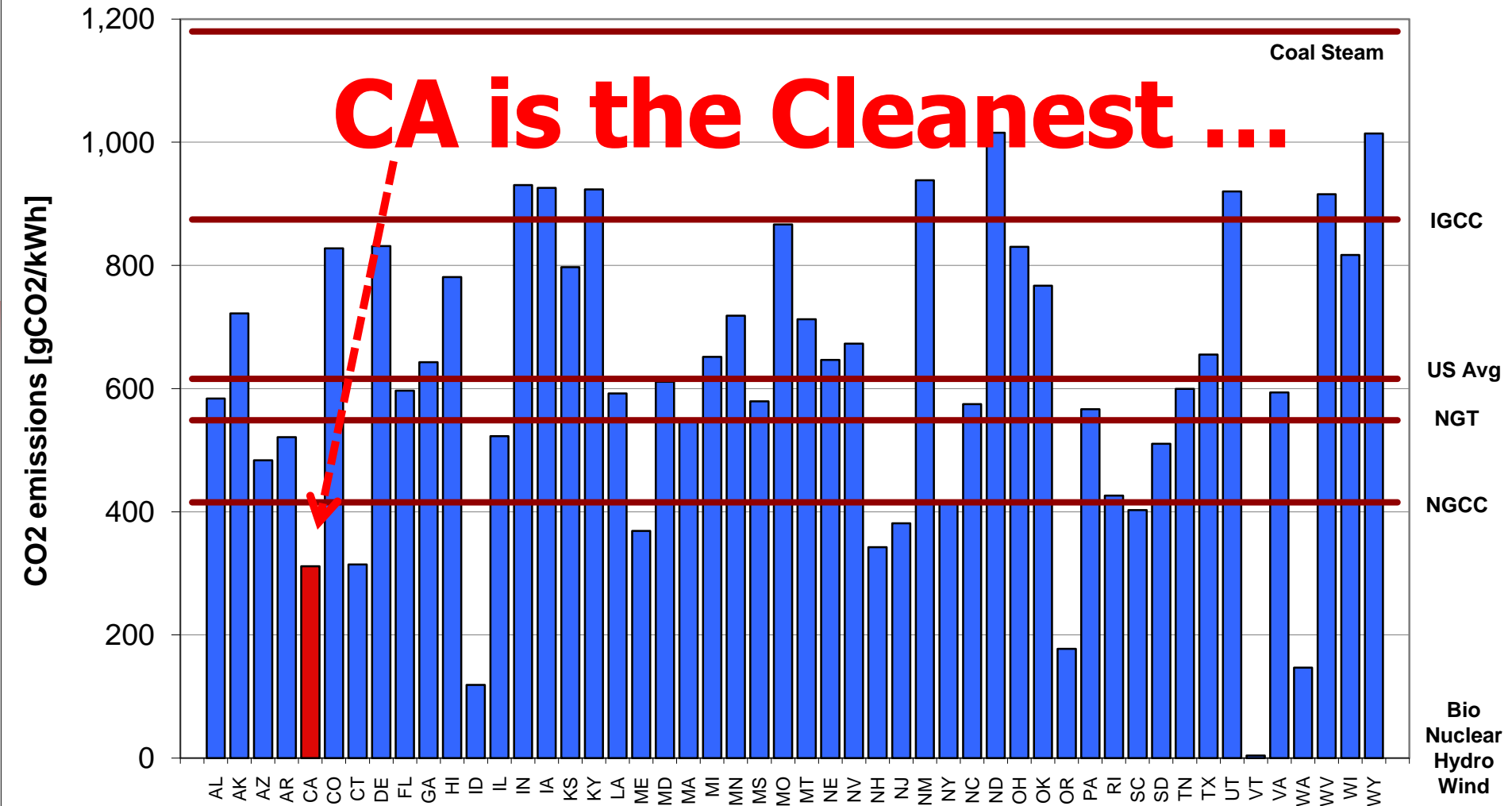


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- \$45 M DOE program - MDT
- LD PHEV + EV RD+D
- Electric buses
- Advanced batteries
- Infrastructure
- Incentive funding

# Electricity Carbon Intensity:

CO<sub>2</sub> From Electricity Generation (2004)



# Electric Drive Technology:

## *Ready for Numerous Market Segments*



### ON-ROAD SEGMENT

- LD
- Med Duty
- Heavy Duty
- Buses
- Truck Stops

### OFF-ROAD SEGMENT

- Port-related
  - On-dock rail (electric)
  - Ship “cold ironing”
  - Drayage trucks
  - Gantry Cranes
- Rail
- Aircraft
  - Ground Support Equip.

# Conclusions:



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- ***The Electric Drive era has already started***
- We are fortunate to hear from leading experts today:
  - Clean Fuel Connection – Enid Joffe
  - SoCalEV – Sarah Potts
  - Riverside Public Utilities – Steve Badgett